NOTE ON THE SOLUTION OF PROB. 363, BY PROF. W. W. JOHNSON.— The following proof of Prob. 363 shows that the theorem is true for all convex ovals.

Let O be the fixed point and AB the chord, the tangent at B being parallel to OA; and complete the parallelogram $AOBT$. As B travels about the oval the tangent BT is at every instant rotating about B; Hence, since BT is equal and parallel to OA it generates an area equal to that generated by OA, that is, an area equal to the given oval. Thus the area of the locus of T is double that of the oval. Now the middle point of AB is also the middle point of OT, hence its locus is similar to that of T, and its area is one fourth the area of the locus of T or one half the area of the given oval.

ANOTHER SOLUTION OF PROB. 365, BY PROF. ASAPH HALL.—It is plain that the indetermination will occur only for very small values of θ.

Put therefore $\cos\theta = 1 - \frac{1}{2}\theta^2$, and, neglecting higher powers of θ, we shall have,

$$\int_0^\theta \frac{\sqrt{(1-c)}.d\theta}{1-c+\frac{1}{2}nc.\theta^2} = \sqrt{\frac{2}{nc}}\,.\,\tan^{-1}\frac{\theta.\sqrt{(nc)}}{\sqrt{[2(1-c)]}};$$

$$= \sqrt{\frac{2}{n}}\,.\,\frac{\pi}{2} = \frac{\pi}{\sqrt{(2n)}},$$

when $c = 1$. This is the value required, since the upper limit may be changed from θ to $\frac{1}{2}\pi$.

SOLUTIONS OF PROBLEMS IN NUMBER SIX, VOL. VIII.

SOLUTIONS of problems in No. 6, Vol. VIII, have been rec'd as follows:

From R. J. Adcock, 374; Prof. W. P. Casey, 368, 370, 371; George E. Curtis, 370; Dr. H. Eggers, 368, 370; Prof. A. B. Evans, 371; Prof. E. J. Edmunds, 368, 369, 370; George Eastwood, 372; Prof. E. W. Hyde, 369; W. E. Heal, 369; William Hoover, 372; Prof. J. Scheffer, 368, 369, 370, 372; Prof. E. B. Seitz, 369, 370, 371; Thos. Spencer, 369; R. S. Woodward, 374.

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368. *By Prof. J. Scheffer.*—"In a quadrilateral $ABCD$, the diagonal AC makes with the sides the four angles $CAB = \alpha$, $ACB = \beta$, $ACD = \gamma$, $CAD = \delta$. Find the angles which the other diagonal BD makes with the sides."